

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 10/797,579

REMARKS

Claims 1, 2, 6, 7 and 9-13 are all the claims pending in the application. Claims 1, 2, 6, 7 and 9-13 presently stand rejected. Claim 1 has been amended so that it depends from claim 2. Accordingly, claims 2, 7, and 10 are the only independent claims.

Claim Rejections Under 35 U.S.C. § 102

Chu

Claims 1, 2, 9 and 10 are rejected under 35 U.S.C. § 102(e) as being anticipated by Chu (5,857,127).

Independent claim 2

With respect to independent claim 2, Applicant respectfully traverses this rejection at least because Chu does not disclose the claimed spin coating apparatus. For example, Chu does not disclose a spin coating apparatus for coating photoresist in which the extended projection part of the spin chuck has a height lower than that of the wafer mounted on the mount part.

As an initial matter, Chu's apparatus does not provide spin coating of photoresist. Instead, Chu's apparatus provides ultrasonic agitation of developer liquid used to dissolve photoresist.¹

Moreover, the Examiner alleges that Chu's cup-type housing 30 corresponds to the recited extended projection part of the spin chuck.² However, Chu's cup-type housing 30 cannot

¹ See Chu at 3:67-4:11.

² See Office Action dated July 7, 2006 at page 2, para. 3.

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correspond to this recited feature because the cup-type housing 30 is always extends above the wafer 20.³

Therefore, Applicant respectfully requests that the Examiner withdraw this rejection
Dependent claims 1, 9, and 10

Applicant also respectfully requests that the Examiner withdraw this rejection of dependent claims 1, 9, and 10 at least because of their dependency from claim 2.

Konishi

Claims 1, 2, 9 and 10 are rejected under 35 U.S.C. § 102(e) as being anticipated by Konishi et al. (6,012,858).

Independent claim 2

With respect to independent claim 2, Applicant respectfully traverses this rejection at least because Konishi does not disclose the claimed spin coating apparatus. For example, Konishi does not disclose a spin coating apparatus for coating photoresist in which the extended projection part of the spin chuck has a height lower than that of the wafer mounted on the mount part.

Like Chu's apparatus, Konishi's apparatus mounts and coats developing solution, not photoresist.⁴ Furthermore, the embankment part 33 of Konishi's tray section will always be higher than the wafer. That is, Konishi only discusses varying the *step rise* between members

³ See Chu at FIG. 3.

⁴ See Konishi at 1:5-7.

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31 and 32.⁵ This would not suggest that the embankment part 33 will ever be lower than the wafer.

Therefore, Applicant respectfully requests that the Examiner withdraw this rejection.

Dependent claims 1, 9, and 10

Applicant also respectfully requests that the Examiner withdraw this rejection of dependent claims 1, 9, and 10 at least because of their dependency from claim 2.

Claim Rejections Under 35 U.S.C. § 102

Kelly and Chu

Claims 1, 2, 9 and 10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kelly et al. (5,294,257) in view of Chu (5,857,127).

Claim 2

With respect to independent claim 2, Applicant respectfully traverses this rejection at least because the combination of Kelly and Chu does not reasonably disclose the claimed spin coating apparatus. For example, the combination of Kelly and Chu would not reasonably disclose a spin coating apparatus for coating photoresist in which the extended projection part of the spin chuck has a height lower than that of the wafer mounted on the mount part, the extended projection part facilitating formation of an edge bead thereon.

The Examiner asserts that Kelly's inflatable elastomer 17⁶ or resilient elastomer ring 41⁷ corresponds to the extended projection part on which an edge-bead is formed and alleges that the

⁵ See Konishi at 6:9-10.

⁶ See Kelly at FIGs. 2.

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elastomer 17, 41 can be lower than the wafer substrate 11 “depending [on] the thickness of the substrate and the elasticity of the ring 17, 41.⁸

As an initial matter, with respect to FIG. 2 of Kelly, the edge-bead 23 is not formed on the elastomer 17. Instead, the edge bead is formed on the frame 15. Since the edge-bead is not formed on the elastomer 17, it is not necessary for the elastomer 17 to be lower than the substrate 11 in order to prevent the edge-bead 23 from being formed on the substrate 11.

Moreover, referring to FIGS. 3A and 3B of Kelly, when the wafer substrate 11 is disposed on an elastomer 41, an edge seal is provided by pulling the wafer substrate 11 down with a vacuum force into the elastomer 41 located along the edge of the wafer substrate 11. This seal prevents the photoresist or resist from being coated on the edge and back of the wafer substrate 11.² Accordingly, unlike the invention, Kelly’s elastomer 41 (as well as the elastomer 17) is not used to prevent the formation of the edge bead on the substrate. Instead, the elastomer prevents the formation of resist coating on the edge and back of the substrate by effectively surrounding the circumference of the substrate.

Therefore, even assuming *arguendo* that the Examiner considers that an edge bead, similar to the edge bead 23 formed on the frame 15 of FIG. 2, is formed on the elastomer 41 of FIG. 3;¹⁰ Kelly’s elastomer 41¹¹ *should not be lower than the wafer substrate 11*. That is, if the

⁷ See Kelly at FIGs. 3B.

⁸ See Office Action dated July 7, 2006 at page 5, para. 7, lines 11-12.

⁹ See Kelly at 5:21-25.

¹⁰ Or that the elastomer 17 and frame 15 together correspond to the extended projection part.

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elastomer 41 is lower than the substrate 11, then the elastomer 41 would not be able to prevent the resist from coating the edge of the substrate. As discussed above, this is a reason why the apparatus of Kelly uses an elastomer.

Therefore, Applicant respectfully requests that the Examiner withdraw this rejection.

Dependent claims 1, 9, and 10

Applicant also respectfully requests that the Examiner withdraw this rejection of dependent claims 1, 9, and 10 at least because of their dependency from claim 2.

(Chu or Konishi) and Emami

Claims 6, 7, 12 and 13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Chu (5,857,127) or Konishi et al. (6,012,858) and further in view of Emami et al. (2003/0070695).

Independent claim 7

With respect to independent claim 7, Applicant respectfully requests that the Examiner withdraw this rejection at least for the reasons discussed above with respect to the § 102 rejections of claim 2 and because Emami, which is cited by the Examiner as showing a gas exhaust, does not cure the deficiencies in Chu and Konishi discussed above.

Dependent claims 6, 12, and 13

Applicant also respectfully requests that the Examiner withdraw this rejection of dependent claims 6, 12, and 13 at least because of their dependency from either claim 2 or claim 7.

¹¹ Or the elastomer 17 and frame 15 together.

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Kelly, Chu, and Emami

Claims 6, 7, 12 and 13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kelly et al. (5,294,257) in view of Chu (5,857,127) and Emami et al. (2003/0070695). Claim 11 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kelly et al. (5,294,257) in view of Chu (5,857,127) and Emami et al. (2003/0070695).

Independent claim 7

With respect to independent claim 7, Applicant respectfully requests that the Examiner withdraw this rejection at least for the reasons discussed above rejections of claim 2 over Kelly and Chu and because Emami, which is cited by the Examiner as showing a gas exhaust exhausted from an edge of the wafer, does not cure the deficiencies in Chu and Konishi discussed above.

Dependent claims 6, 12, and 13

Applicant also respectfully requests that the Examiner withdraw this rejection of dependent claims 6, 12, and 13 at least because of their dependency from either claim 2 or claim 7.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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23373

CUSTOMER NUMBER

Date: September 22, 2006

Attorney Docket No.: Q80074